DEPARTMENT of ENVIRONMENTAL SERVICES Water Supply & Pollution Control Division - Biology Bureau

LAKE TROPHIC DATA

MORPHOMETRIC:

Lake: MESSER POND	Lake Area (ha):	26.99
Town: NEW LONDON	Maximum depth (m):	7.6
County: Merrimack	Mean depth (m):	2.6
River Basin: Merrimack	Volume (m³):	704000
Latitude: 43°24'02" N	Relative depth:	1.3
Longitude: 72°00'16" W	Shore configuration:	1.74
Elevation (ft): 1105	Areal water load (m/yr)	: 12.34
Shore length (m): 3200	Flushing rate (yr^{-1}) :	4.70
Watershed area (ha): 569.8	P retention coeff.:	0.53
<pre>% watershed ponded: 0.0</pre>	Lake type:	natural

BIOLOGICAL:	27 February 1997	16 July 1996
DOM. PHYTOPLANKTON (% TOTAL) #1	SYNURA 60%	DINOBRYON 50%
#2	DINOBRYON 40%	RHIZOSOLENIA 12%
#3		SYNEDRA 9%
PHYTOPLANKTON ABUNDANCE (units/mL)		
CHLOROPHYLL-A (µg/L)		11.48
DOM. ZOOPLANKTON (% TOTAL) #1	LRG RND CILIATE SPP 84%	KERATELLA 29%
#2		KELLICOTTIA 23%
#3		NAUPLIUS LARVA 16%
ROTIFERS/LITER	7	182
MICROCRUSTACEA/LITER	9	57
ZOOPLANKTON ABUNDANCE (#/L)	106	245
VASCULAR PLANT ABUNDANCE		Common
SECCHI DISK TRANSPARENCY (m)		2.5
BOTTOM DISSOLVED OXYGEN (mg/L)	3.9	0.3
BACTERIA (E. coli, #/100 ml) #1		
#2		
#3		

SUMMER THERMAL STRATIFICATION:

stratified

Depth of thermocline (m): 4.5 Hypolimnion volume (m 3): 4200 Anoxic volume (m 3): 16250

Lake: MESSER POND Town: NEW LONDON					
	27 Febru	uary 1997	y 1997 16 July 1996		
DEPTH (m)	2.0	4.0	2.0		5.0
pH (units)	5.9	5.9	6.5		5.9
A.N.C. (Alkalinity)	6.7	7.1	5.0		7.8
NITRATE NITROGEN	0.13	0.12			< 0.05
TOTAL KJELDAHL NITROGEN	0.35	0.46	0.17		0.29
TOTAL PHOSPHORUS	0.014	0.015	0.013		0.022
CONDUCTIVITY (µmhos/cm)	103.6	129.1	89.2		89.4
APPARENT COLOR (cpu)	38	38	39		70
MAGNESIUM			0.73		
CALCIUM			3.7		
SODIUM			10.8		
POTASSIUM			0.78		
CHLORIDE	22	30	18		19
SULFATE	5	5	4		4
TN : TP	34	39			13
CALCITE SATURATION INDEX					

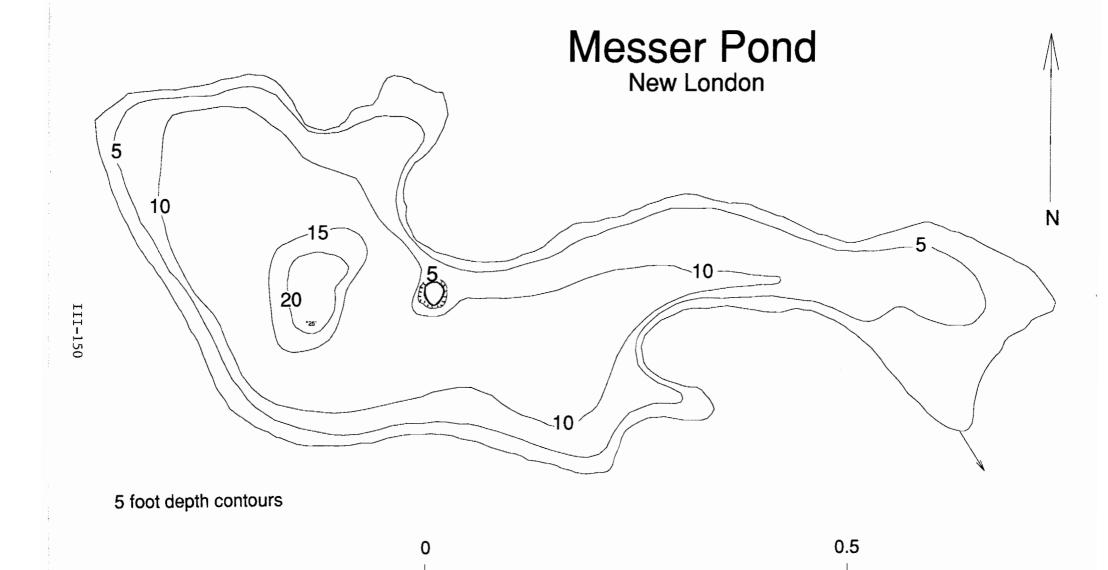
All results in mg/L unless indicated otherwise

TROPHIC CLASSIFICATION: 1996

D.O.	s.D.	PLANT	CHĻ	TOTAL	CLASS
4	3	3	2	12	Meso.

COMMENTS:

- 1. Messer Pond was previously surveyed and classified in 1981. There was no change in trophic class but additional trophic points were awarded in 1996 due to a combination of (a) a higher chlorophyll level, (b) a deeper sampling station with bottom dissolved oxygen depletion during stratification (thermal stratification was not present at the shallower depth in 1981), and (c) a revised trophic classification system.
- 2. Messer Pond became a participant in DES' VLAP program in 1996. Insufficient data is available to discuss trends, but the volunteers also found elevated chlorophyll levels in 1996 compared to 1997 levels when chlorophyll returned to the 3 to 4 mg/m³ range (similar to 1981).
- 3. The summer, surface sample was apparently collected in a sample bottle containing nitric acid preservative, causing an abnormally low pH reading and abnormally high conductivity and nitrate readings. The summer, surface data presented above is from 8/96 VLAP data.
- 4. Sodium and chloride values suggest road salt runoff into the pond.



Km

FIELD DATA SHEET

LAKE: MESSER POND

DATE: 07/16/96

TOWN: NEW LONDON WEATHER: WARM, BREEZY, SUNNY

211121 07, 10, 30		BRI WHELL, BREEZEL,	BOILLI
DEPTH (M)	TEMP (°C)	*DISSOLVED OXYGEN	OXYGEN SATURATION
0.1	22.8	7.9	89 %
1.0	22.7	7.7	87 %
2.0	20.4	6.9	74 %
3.0	19.4	4.7	45 %
4.0	17.0	1.8	18 %
5.0	11.6	0.2	2 %
6.0	9.0	0.3	2 %
7.0	8.0	0.4	3 %

SECCHI DISK (m):

2.5

COMMENTS:

BOTTOM DEPTH (m):

TIME:

1200

7.6

The entire hypolimnion and

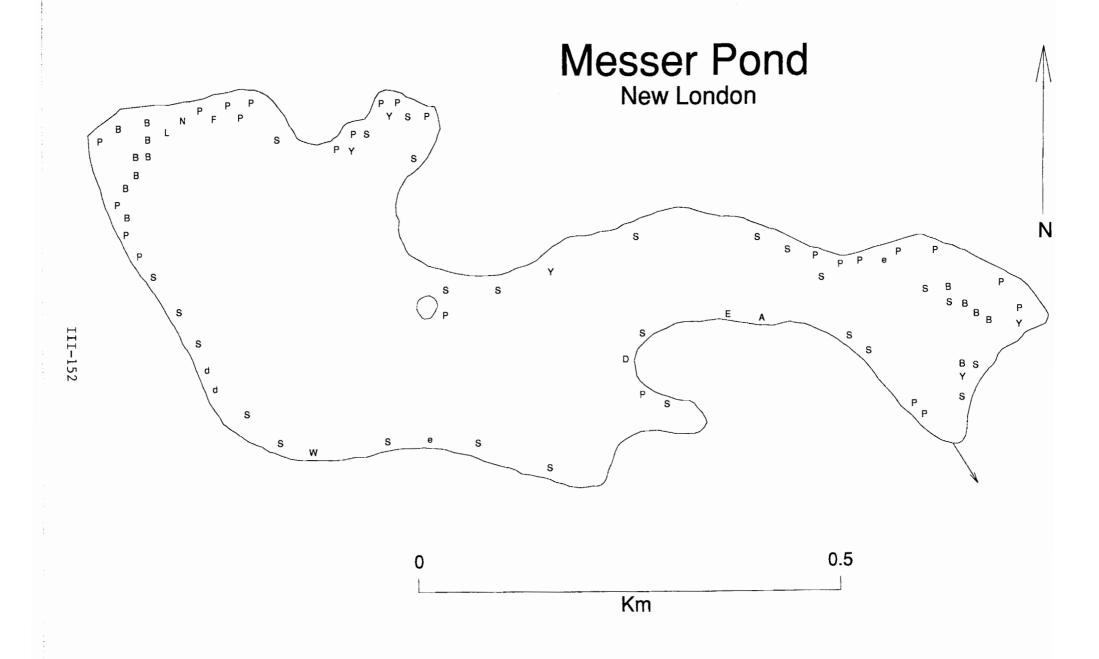
the portion of the

metalimnion below the

thermocline (4.5m) was

*Dissolved oxygen values are in mg/L

devoid of dissolved oxygen.



AQUATIC PLANT SURVEY

LAK	E: MESSER POND	TOWN: NEW LONDON	DATE: 07/16/96
Key	PL	ABUNDANCE	
no y	GENERIC	COMMON	ABONDANCE
S	Sparganium	Bur reed	Common
Y	Nuphar	Yellow water lily	Scattered
В	Brasenia schreberi	Water shield	Common
P	Pontederia cordata	Pickerelweed	Common
е	Eleocharis	Spike rush	Sparse
N	Nymphaea	White water lily	Sparse
F	Nymphoides cordatum	Floating heart	Sparse
L	Lobelia dortmanna	Water lobelia	Sparse
W	Potamogeton	Pondweed	Sparse
D	Decodon verticillatus	Swamp loosestrife	Sparse
E	Eriocaulon septangulare	Pipewort	Sparse
A	Sagittaria	Arrowhead	Sparse
d	Dulichium arundinaceum	Three-way sedge	Sparse
-			

GENERAL OBSERVATIONS:

- 1. Sweet gale was common along the northern shoreline but is not depicted on the map.
- 2. Similar plant and plant abundances were found in both 1996 and 1981. The 1981 plant map appears to show more plant growth, primarily because the shoreline plant sweet gale was portrayed on the 1981 map.

OVERALL ABUNDANCE: Common